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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,594	04/28/2006	Menachem H. Graupe	UIC0340.102	3199

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ZIOLKOWSKI PATENT SOLUTIONS GROUP, SC (ZPS)
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EXAMINER

MORALES, JON ERIC C

ART UNIT	PAPER NUMBER
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3766

NOTIFICATION DATE	DELIVERY MODE
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04/24/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/595,594	Applicant(s) GRAUPE ET AL.	
	Examiner JON-ERIC C. MORALES	Art Unit 3766	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 39 is/are allowed.
- 6) ☒ Claim(s) 1-5,7,9,10,15,20-30,33,34 and 36-38 is/are rejected.
- 7) ☒ Claim(s) 6,8,11-14,16-19,31,32 and 35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>4/28/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 15, 20-22, 24-27, and 33, are rejected under 35 U.S.C. 102(b) as being anticipated by Rosenthal (US 5209237). Regarding claims 1, 20, 26, 27, 33, and 39 Rosenthal discloses separating one or more fetal heart component signals from heart signal information obtained from a pregnant female based on singular value decomposition (SVD) at any time (column 4 lines 12-54, column 5 lines 21-column 10 line 23).

Regarding claims 2, 21, Rosenthal discloses one or more analog-to-digital converter 115 to digitize the heart signal information upon receipt of the heart signal information (column 6 lines 6-36).

Concerning claims 3, 4, 22, Rosenthal discloses one or more filtering components, non-linear and non-linear inverse filters to reduce one or more amplitude of one or more components of the heart signal information (column 7 lines 20-57, column 8 lines 25-67, column 11 lines 22-60).

With respect to claims 15, 24, 25 Rosenthal discloses one or more processor components record the plurality of electrocardiogram signals through employment of

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three or more electrode pairs of abdominal and chest electrode sensor pairs 101,102 (fig.1, column 5 lines 33-68).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5, 7, 9, 10, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenthal (US 5209237) and further in view of Graupe (IEEE Transaction on speech and audio processing). Regarding claims 5, 7, and 23 Rosenthal discloses employing one or more filters to extract one or more fetal heart component signals from heart signal information obtained from a pregnant female, separating the one or more fetal heart component signals from the heart signal information based on independent component analysis (type of singular value decomposition) and employing one or more adaptive filtering components to reduce noise in the one or more fetal heart component signals (column 7 lines 20-57, column 8 line 25-67, column 11 lines 22-60). However Rosenthal does not disclose the adaptive filtering being blind. This feature of blind adaptive filtering is generally known in the state of the art for filtering with out using prior art knowledge on the signal parameters as seen in the NPL document the applicant submitted by Graupe. Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the adaptive filtering

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be blind type as taught by Graupe, that such modification would allow for filtering to be applied to a signal that is not known.

With respect to claim 9, Rosenthal discloses a high-pass filter with a cut-off frequency to remove effects of time-variations in a long term mean of the heart signal information between maternal heart beats (column 6 lines 6-58).

Concerning claim 10, Rosenthal discloses employing one or more stage of differencing between successive samples of the heart signal information to remove effects of time-variations in a long term mean of the heart signal information between maternal heart beats (column 7 lines 20-57).

5. Claims 28-30, 33-34 and 36-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenthal (US 5917919) and further in view of Graupe (IEEE Transaction on speech and audio processing). Regarding claims 28 and 33, Rosenthal discloses employing one or more filters to extract one or more fetal heart component signals from heart signal information obtained from a pregnant female, separating the one or more fetal heart component signals from the heart signal information based on independent component analysis (type of singular value decomposition) and employing one or more adaptive filtering components to reduce noise in the one or more fetal heart component signals (column 2 line 16-column 3 lines 31, column 13, lines 29-53, fig. 2). However Rosenthal does not disclose the adaptive filtering being blind. This feature of blind adaptive filtering is generally known in the state of the art for filtering without using prior art knowledge on the signal parameters as seen in the NPL document the applicant submitted by Graupe. Therefore it would have been obvious to one having

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ordinary skill in the art at the time the invention was made to have the adaptive filtering be blind type as taught by Graupe, that such modification would allow for filtering to be applied to a signal that is not known.

With respect to claims 29 and 34, Rosenthal discloses employing non-linear filter, and the non-linear inverse filter to reduce one or more amplitudes of the hear signal information and employing one or more analog-to-digital converters to digitize the heart signal (column 2 line 66-column 4 line 67, column 6 lines 22-57).

Concerning claim 30 and 38, adaptive filtering components include frequency domain (column 7 lines 5-32).

Claims 36 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenthal (US 5917919) (herein after Rosenthal '919) in view of Graupe (IEEE Transaction on speech and audio processing) as applied to claim 33 above, and further in view of Rosenthal (US 5209237) (herein after Rosenthal '237). Rosenthal' 919 discloses the invention substantially as claimed however does not show one or more processor components record the plurality of electrocardiogram signals through employment of three or more electrode pairs of abdominal electrode sensor pairs. Rosenthal '237 discloses one or more processor components record the plurality of electrocardiogram signals through employment of three or more electrode pairs of abdominal electrode sensor pairs 101 and 102 (fig.1, column 5 lines 33-68). Allows for better sensing of fetal heart signal information Therefore it would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify the device of

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Rosenthal '919 by adding abdominal electrode sensor pairs as taught by Rosenthal '237 in order to facilitate better sensing of fetal heart signal information.

Double Patenting

6. Claims 13-14 are objected to under 37 CFR 1.75 as being a substantial duplicate of claims 11 and 12. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Objections

7. Claims 6, 8, 11-12, 16-19, 31, 32, 35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Allowable Subject Matter

8. Claim 39 is allowed.

9. The following is a statement of reasons for the indication of allowable subject matter: Regarding independent claim 39, for a filtering fetal heart component signals including using cepstral analysis to reduce noise in the one or more fetal heart component signals has not been suggested or disclosed in the prior art when combined with the rest of the claim limitations of independent claim 39.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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US 20040260169 A1 US-PGPUB Sternnickel, Karsten

US 5784162 A USPAT Cabib; Dario et al.

US 5704365 A USPAT Albrecht; Paul et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JON-ERIC C. MORALES whose telephone number is (571)272-3107. The examiner can normally be reached on Monday through Friday from 8am - 5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl H. Layno can be reached on 571-272-4949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JON-ERIC C. MORALES/
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